REVISION OF *BAUHINIA* SUBGENUS *BAUHINIA* SECTION *PAULETIA* SERIES *ARIARIA* (CERCIDEAE: CAESALPINIOIDEAE: FABACEAE)

Richard P. Wunderlin

Institute for Systematic Botany
Department of Cell Biology, Microbiology & Molecular Biology
University of South Florida
4202 East Fowler Avenue, BSF 218
Tampa, Florida 33620-5150, U.S.A.
rwunder@cas.usf.edu

ABSTRACT

A taxonomic treatment of *Bauhinia* subgenus *Bauhinia* section *Pauletia* series *Ariaria* is presented. Seven species are recognized with **Bauhinia esmeraldasensis** Wunderlin of Ecuador described. Keys and distributional data are provided.

RESUMEN

Se presenta un tratamiento taxonómico de *Bauhinia* subgenero *Bauhinia* sección *Pauletia* serie *Ariaria*. Se reconoce siete especies con la descripción de **Bauhinia esmeraldasensis** Wunderlin del Ecuador. Se incluyen claves y datos de distribución.

The pantropical genus *Bauhinia* Linnaeus, with approximately 350 species, consists of four subgenera: *Bauhinia*, *Piliostigma* (Hochst.) Kurz [=*Elayuna* (Raf.) Wunderlin et al.], *Barklya* (F. Muell.) Wunderlin et al., and *Phanera* (Lour.) Kurz (Wunderlin et al. 1987). *Bauhinia* subgenus *Bauhinia*, as defined by Wunderlin et al., consists of nine sections of which three (*Bauhinia*, *Pauletia* (Cav.) DC., and *Amaria* (S. Mutis) Endl. are New World. A revision of section *Amaria* was recently published by Wunderlin (2006).

Section *Pauletia*, the largest section of the genus in the neotropics, as defined here, consists of five series (*Aculeatae* Vaz & A.M.G Azevedo, *Cansenia* (Raf.) Wunderlin et al., *Perlebia* (Mart.) Wunderlin et al., *Pentandra* Wunderlin et al., and *Ariaria* (C. Cuervo Márquez) Wunderlin et al.), all New World. Series *Acuminatae*, consisting of two Old World species and placed in *Pauletia* by Wunderlin et al. (1987), is transferred to the Old World section *Telestria*. Series *Aculeatae* was recently described by Vaz and Azevedo Tozzi (2003). This revision of series *Ariaria* is one of several proposed taxonomic treatments of the New World species of *Bauhina*.

KEY TO THE SERIES OF *BAUHINIA* SECTION *PAULETIA*

1. Plants unarmed.
   2. Leaves subtending the flower clusters much reduced or absent, inflorescence a terminal raceme or panicle, the plants never cauliflorus _____ ser. **Cansenia**
   2. Leaves subtending the flower clusters normally developed, inflorescence leaf-opposed or the plants cauliflorous _____ ser. **Ariaria**
1. Plants armed with spinescent infrastipular excrescences.
   3. Fruit indehiscent _____ ser. **Perlebia**
   3. Fruit dehiscent.
      4. Fertile stamens 5, or if 10, then the alternate ones much reduced _____ ser. **Pentandrae**
      4. Fertile stamens 10, of slightly unequal length _____ ser. **Aculeatae**

Bauhinia section **Pauletia** series **Ariaria** (C. Cuervo Márquez) Wunderlin et al., Biol. Skr. 28:13. 1987. *Ariaria* C. Cuervo Márquez, Prehist. & Viajes 219. 1893. TYPE: *Ariaria superba* C. Cuervo Márquez [=*Bauhinia tarapotensis* Benth.].

Unarmed trees or shrubs. Leaves bilobed; adpetiolar intrastipular excrescence enlarged, forming a laterally flattened, obtuse-tipped, lanceolate structure. Calyx at first spathaceous, soon splitting to the hypanthium into several lobes; fertile stamens 10; pollen 5–7-porate or -colpate, the sexine reticulate with infratectal processes. Fruit dehiscent.

1. Plants with cauliflorous racemes.
   2. Cauliflorous racemes to 80 cm long; fruit 20–22 cm long _____ **B. flagelliflora**
   2. Cauliflorus racemes to 4 cm long; fruit 10–15 cm long _____ **B. esmeraldasensis**
1. Plants with terminal or subterminal racemes along leafy branches.
   3. Leaf lobes with the apex acute or obtuse _____ **B. tarapotensis**
   3. Leaf lobes with the apex rounded.
      4. Leaf blades ovate 5–9(–11)-nerved.
         5. Lower surface of the leaf blade with appressed trichomes _____ **B. multinervia**
         5. Lower surface of the leaf blade with erect trichomes _____ **B. eilertsii**
      4. Leaf blades suborbicular, 11–13-nerved.
         6. Leaf blades 8–13 cm long; ovary densely tomentose; Colombia _____ **B. conceptionis**
         6. Leaf blades 14–24 cm long; ovary tomentulose; Ecuador _____ **B. pichinchensis**

1. Bauhinia conceptionis Britton & Killip, Ann. New York Acad. Sci. 35:160. 1936. TYPE: COLOMBIA. CHOCÓ: La Conceptión, 15 km E of Quibdó, ca. 75 m, 20 Apr–23 May 1931, *W.A. Archer 2086* (HOLOTYPE: NY!).

Tree to 9 m; branches minutely tomentulose soon becoming glabrate. Leaves with the blade chartaceous, suborbicular, 8–13 cm long, 10–13 cm wide, bilobed ca. 1/4 their length, the lobes slightly divaricate, the base shallowly cordate, the lobe apex rounded, the upper surface glabrous, the lower surface minutely tomentulose, at least on the nerves, slightly lighter in color than the upper surface, 11-nerved, the petiole 3.5–4 cm long, minutely tomentulose to glabrate; stipules ovate to lanceolate, 1–2 long, caducous; adpetiolar intrastipular excrescence to 2 mm long, the others minute. Inflorescence terminal or subterminal and axillary, 2–4-flowered, the flowers paired on a common peduncle, the rachis tomentulose; buds linear-lanceolate, ca. 5 cm long, obscurely 5-nerved, the apex apiculate, the peduncle 1–1.5 cm long, the pedicel 1.5–2 cm long; bracts and bracteoles lanceolate, 2–3 mm long, caducous. Hypanthium tubular, 10–13 mm long, 10-nerved; calyx at first spathaceous, soon irregularly splitting to the hypanthium into 2–5 lobes; petals white, subequal, linear to linear-spathulate, ca. 5 cm long, 6–7 mm wide, glabrous or glabrate (sometimes with a few trichomes on the claw), the margin slightly crisped, the claw ca. 1 cm long; fertile stamens 10, the filaments of the outer whorl ca. 5 cm long, subequaling the petals, the inner whorl slightly shorter, irregularly connate at the base to 5 mm into a staminal sheath, the staminal sheath tomentulose on the inner surface, the anthers not seen; gynoecium ca. 5 cm long, subequaling the androecium, the ovary ca. 1.5 cm long, densely tomentose, with sparse glandular trichomes, the stipe ca. 1.5 cm long, glabrate, the style ca. 1.5 cm long, tomentose proximally, sparsely tomentulose to glabrate distally, the stigma obliquely capitate. Fruit not seen.

Distribution and ecology.—Colombia in Chocó. Known only from the type collection. Habitat unknown. Flowering in April.

Bauhinia conceptionis is closely related to *B. tarapotensis*, but differs by its suborbicular leaves with rounded lobe apices and smaller flowers (6–7 cm long vs. 14–21 cm long in *B. tarapotensis*).

2. Bauhinia eilertsii Pulle, Recueil Trav. Bot. Néerl. 6:269. 1909. TYPE: SURINAME: Upper Suriname River near Dotti Bergi, 9 Jul 1908, *J. Tresling 86* (HOLOTYPE: U!).

Tree to 22 m; branches hirsute-tomentulose to glabrate when young, soon becoming glabrous. Leaves with the blade chartaceous, suborbicular, 10–21 cm long, 10–21 cm wide, emarginate or bilobed to 1/3 their length, the base cordate, the lobe apex rounded, the upper surface glabrous, the lower surface light brown hirsute-tomentulose, slightly lighter in color than the upper surface, 9–11-nerved, the petiole (2.5–)4–5(–6) cm long, brown hirsute-tomentulose; stipules lanceolate, ca. 2 mm long, persistent; adpetiolar infrastipular excrescence ca. 2 mm long, the others minute. Inflorescence terminal or subterminal and axillary, the flowers paired on a common peduncle, sometimes short-racemose, rarely paniculate, or less commonly solitary by abortion, the rachis brown-tomentose; buds linear, 7–9 cm long, 10-nerved, the apex acute, the peduncle ca. 1 cm long, the pedicel 0.5–2.0 cm long; bracts and bracteoles ovate-lanceolate, ca. 1 mm long, persistent. Hypanthium short-tubular, 1.5–2.5 cm long; calyx at first spathaceous, soon irregularly splitting to the hypanthium into 2–5 lobes; petals white with wine-red veins, subequal, linear to linear-spatulate, 8–11 cm long, 6–10 mm wide, glabrous, the margins slightly crisped, the claw ca. 1 cm long; fertile stamens 10, the

filaments wine-red, the outer whorl 8–11 cm long, subequaling the petals, the inner whorl slightly shorter, irregularly short-connate at the base for 5–20 mm into a staminal sheath, the staminal sheath tomentose on its inner surface, otherwise glabrous, the anthers linear-oblong, 1–1.5 cm long, glabrous; gynoecium 7–9 cm long, subequaling the androecium, the ovary 1.5–2 cm long, reddish brown-tomentose, the gynophore 3–4 cm long, reddish brown-tomentose near the ovary, glabrate below, the style 4–6 cm long, reddish brown-tomentose proximally, sparsely short-hirsute distally, the stigma obliquely capitate. Fruit linear, apiculate with the persistent style base, 20–30 cm long, 2.5–3 cm wide, reddish brown-tomentulose or -velutinous, the stipe ca. 4 cm long, glabrate; seeds oblong to suborbicular, ca. 15 mm long, ca. 12 mm wide, the surface brown, dull, the funicular aril-lobe scars subequal, ca. 1 cm long, extending ca. 1/3 the way around the seed.

Distribution and ecology.—Venezuela in Bolívar and Monagas and in Suriname. In forest at 100–800 m. Flowering January to October; fruiting January to July.

This species is most closely related to *B. multinervia*, but is easily distinguished by its erect trichomes on the lower leaf surface and the blade suborbicular (vs. appressed trichomes and the blade rarely suborbicular in *B. multinervia*).

Specimens examined. **VENEZUELA. Bolívar:** between the town of El Dorado and small settlement at km 88, along the trail connecting the La Lara and Corazon de Jesús mines, Aug 1966, *Blanco 537* (MO, NY); ca. 12 km S of El Dorado (06°43'N, 61°37'W), 19 Feb 1983, *Hokche 25* (USF); near Palmar, ca. 100 m, ca. 50 km NE of Upata, (07°39'54"N, 66°7'48"W), 19 Jun 1983, *Hokche 39* (USF); Reserva Forestal Imataca, Carretera Casa Blanca-San Martín de Turumbán (Anacoco), Río Cuyuní, 21 May 1982, *Stergios et al. 3863* (MO); along road between km 11 and 18.5, S of El Dorado, 215 m, 23 Jul 1960, *Steyermark 86620* (US). **Monagas:** ca. 2–3 km NE of Santa Ines, 790–800 m, 6 Jun 1967, *Pursell et al. 9188* (NY, US). **SURINAME.** Nature Park Brownsberg, near Irene Falls, 21 Jan 1974, *Roberts s.n.* (*L.B.N. No. 16305*) (K, US); Nature Park Brownsberg, 10 Oct 1969, *Tawjaeran s.n.* (*L.B.N. No. 12584*) (K, US); Nature Park Brownsberg, 25 Jan 1974, *Tawjoeran s.n.* (*L.B.N. No. 13721*) (K, US); Nature Park Brownsberg, 2 Jul 1924, *Wullschlaegel s n.* (*L.B.N. No. 6126*) (K); Nature Park Brownsberg, 24 Mar 1924, *Wullschlaegel s.n.* (*L.B.N. No. 6421*) (NY); Nature Park Brownsberg, 30 Jan 1925, *Wullschlaegel s.n.* (*L.B.N. NO. 6760*) (NY).

3. Bauhinia esmeraldasensis Wunderlin, sp. nov. (**Fig. 1**). TYPE: ECUADOR. ESMERALDAS: Bilsa Biological Station, Montañas de Mache, 35 km W of Quinindé, 5 km W of Santa Isabela (00°21'N, 79°44'W), 400–600 m, 3 Jan 1955, *N. Pitman 1173* (HOLOTYPE: MO!; ISOTYPE: USF!).

A *Bauhiniae flagelliflorae* Wunderlin foliis, fructibus, et inflorescentiis minoribus differt.

Tree to 6 m; branches minutely stigulose to glabrate, soon becoming glabrous. Leaves with the blade submembranaceous to chartaceous, suborbicular, 8–13 cm long, 8–13 cm wide, bilobed 1/4–1/3 their length, the lobes divaricate, the base cordate, the lobe apex acute to apiculate or slightly caudate, the upper surface glabrous, the lower surface minutely tomentulose, at least on the nerves, slightly lighter in color than the upper surface, 9–11-nerved, the petiole 4–6 cm long, minutely strigulose to glabrate; stipules lanceolate, ca. 2 mm long, caducous; adpetiolar intrastipular excrescence ca. 2 mm long, the others minute. Inflorescence cauliflorous racemes to 4 cm long, 10–12-flowered, the flowers fasciculate, the rachis tomentulose; buds linear-lanceolate, 3–4 cm long, 10-nerved, the apex acuminate, the peduncle ca. 5 mm long, the pedicel ca. 5–10 mm long; bracts and bracteoles triangular-ovate, ca. 1 mm long, persistent. Hypanthium short-tubular, 6–10 mm long, 10-nerved; calyx at first spathaceous, soon splitting to the hypanthium into 2–5 lobes; petals white, subequal, linear-spathulate, 5–7 cm long, 0.5–1 cm wide, glabrous, the margin slightly crisped, the claw ca. 5 mm long; fertile stamens 10, the filaments of the outer whorl 4–6 cm, slightly shorter than the petals, the inner whorl ca. 1 cm shorter, irregularly connate at the base 10–15 mm into a staminal sheath, the staminal sheath sparsely pilose on the inner surface, the anthers linear-oblong, glabrous, those of the inner whorl 5–6 mm long, those of the outer whorl 3–4 mm long; gynoecium 6–7 cm long, subequaling the androecium, the ovary ca. 1 cm long, tomentose, the gynophore ca. 2 cm long, glabrous, the style 3–4 cm long, tomentulose proximally, the stigma obliquely capitate. Fruit 10–15 cm long, 2–2.5 cm wide, brown, apiculate with the persistent style base, sparsely tomentulose to glabrate, 3–4-seeded, the stipe ca. 2 cm long, glabrous; seeds suborbicular, 12–14 mm long, 9–11 mm wide, the surface dull brown, the funicular aril-lobe scars 2–3 mm long.

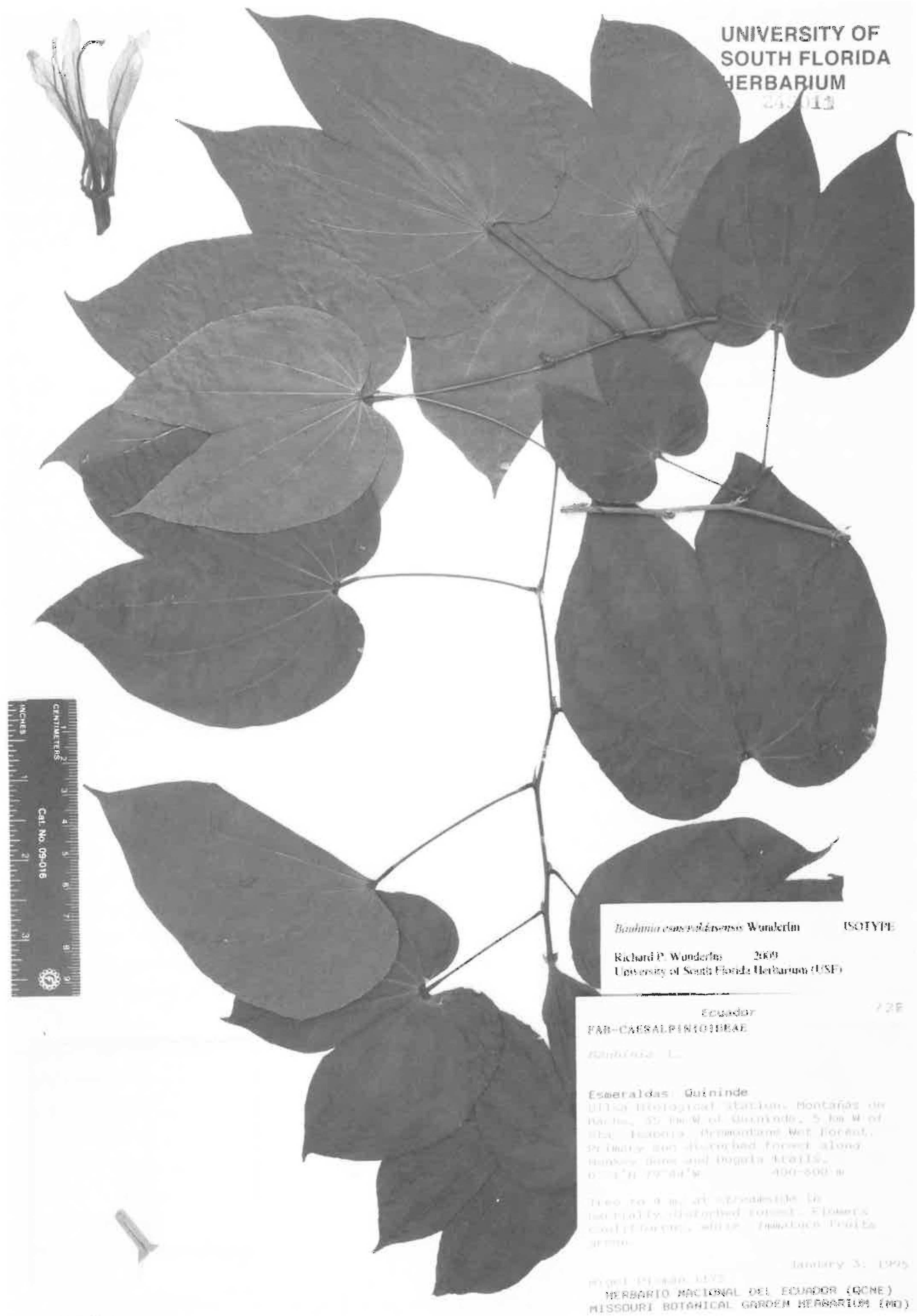

Fig. 1. ***Bauhinia esmeraldasensis*** **(isotype, USF).**

PARATYPES: **ECUADOR. Esmeraldas:** Bilsa Biological Station, Montañas de Mache, 35 km W of Santa Isabel, (00°21'N, 79°44'W), 400–600 m, 28 Sep 1994, *M.S. Bass, L. Kueppers, & N. Pitman 88* (MO, USF); Bilsa Biological Station, Mache Mountains, 35 km W of Quinindé, 5 km W of Santa Isabel, (00°21'N, 79°44'W), 400–600 m, 14 Nov 1994, *J.L. Clark, H. Lintz, & S. Mora 234* (MO, USF); Bilsa Biological Station, Mache Mountains, 35 km W of Quinindé, 5 km W of Santa Isabel, (00°21'N, 79°44'W), 400–600 m, 7 Oct 1994, *J.L. Clark & H. Lintz 162* (MO, USF) Bilsa Biological Station, Mache Mountains, 35 km W of Quinindé, 5 km W of Santa Isabel, (00°21'N, 79°44'W), 400–600 m, 10 Apr 1995, *J.L. Clark & Y. Troya 696* (MO, USF); Bilsa Biological Station, Montañas de Mache, 35 km W of Quinindé, 5 km W of Santa Isabela, (00°21'N, 79°44'W), 400–600 m, 7 Dec 1994, *N. Pitman & M. Bass 1039* (MO, USF).

Etymology.—The name is derived from the Ecuadorian Province Esmeraldas.

Distribution and ecology.—Endemic to Ecuador in Esmeraldas. In mature premontane wet forest at 400–600 m. Flowering January to October; fruiting September to December.

Bauhinia emeraldasensis is closely related to *B. flagelliflora* in being cauliflorous, but differs in its smaller inflorescences (4 cm long in *B. esmeraldasensis* vs. 80 cm in *B. flagelliflora*), its smaller fruit (10–15 cm long in *B. esmeraldasensis* vs. 20–22 cm in *B. flagelliflora*) and its thinner and smaller leaves (8–13 cm long in *B. esmeraldasensis* vs. 20–26 cm in *B. flagelliflora*).

In the Cercideae, cauliflory occurs in the temperate northern hemispheric genus *Cercis* Linnaeus and the African genus *Adenolobus* (Harvey) Torre & Hillcoat. It is unknown in the west African genus *Griffonia* Baillon and the Madagascaran genus *Brenieria* Humberet and is rare in *Bauhinia*. In the new world species of *Bauhinia* it is known to occur only in *B. cookii* Rose (subgenus *Bauhinia* section *Amaria*) and in two species of subgenus *Bauhinia* section *Pauletia* series *Ariaria* (*B. esmeraldasensis* and *B. flagelliflora*).

4. Bauhinia flagelliflora Wunderlin, Brittonia 35:335. 1983. TYPE: ECUADOR. PICHINCHA: ridge line at Centinela at crest of Montañas de Ila on road from Patricia Pilar to 24 de Mayo at km 12, 600 m, 6 Feb 1979, *C.H. Dodson 7345* (HOLOTYPE: SEL!; ISOTYPES: MO!, USF!).

Tree to 9 m; branches glabrous. Leaves with the blade submembranaceous to chartaceous, broadly ovate, 20–26 cm long, 17–20 cm wide, bilobed to ca. 1/4 their length, the lobes slightly divaricate, the base cordate, the apex lobe attenuate, the upper surface glabrous, the lower surface tomentulose, at least on the nerves, slightly lighter in color than the upper surface, 9–11-nerved, the petiole 7–9 cm long, sparsely tomentulose to glabrate; stipules triangular-lanceolate, ca. 2 mm long, caducous; adpetiolar intrastripular excrescence ca. 1 mm long, the others minute. Inflorescence cauliflorous racemes to 80 cm long, 20–40-flowered, the flowers paired or solitary by abortion, the peduncle adnate to the rachis (stem), emerging just above the next higher node, the rachis tomentulose; buds linear, ca. 6 cm long, ecostate, the apex apiculate, the peduncle 10–20 cm long, the pedicel ca. 1 cm long; bracts and bracteoles triangular-ovate, ca. 1 mm long, persistent. Hypanthium tubular, ca. 1.5 cm long, obscurely 10-nerved; calyx at first spathaceous, soon irregularly splitting to the hypanthium into 2–5 lobes; petals white, linear-oblanceolate, ca. 5 cm long, ca. 6 mm wide, glabrous, the claw ca. 5 mm long; fertile stamens 10, the filaments of the outer whorl 3.5–4 cm long, the inner whorl slightly shorter, irregularly short-connate at the base for 1–5 mm into a staminal sheath, the staminal sheath pilose-tomentose on the inner surface, the anthers linear-oblong, 6–8 mm long, glabrous; gynoecium ca. 6 cm long, subequaling the androecium, the ovary ca. 12 mm long, tomentose, the gynophore 2.5–3 cm long, glabrous, the style ca. 2 cm long, tomentulose proximally, otherwise glabrate, the stigma obliquely capitate. Fruit (immature) linear-oblanceolate, apiculate with the persistent style base, 20–22 cm long, 2–2.2 cm wide, brown, sparsely tomentulose to glabrate, the stipe ca. 3 cm long, glabrous; seeds not seen.

Distribution and ecology.—Ecuador in Pichincha. Known only from the type collection. In subpluvial forest at 600 m. Flowering in February.

With its large leaves, *Bauhinia flagelliflora* at first resembles *B. pichichensis* and *B. tarapotensis*, but is probably more related to *B. esmeraldasensis* by being cauliflorous, a feature it shares with that species (see above). It differs from *B. esmeraldasensis* by its larger inflorescences (80 cm long in *B. flagellliflora* vs. 4 cm long in *B. esmeraldasensis*) and its larger leaves (20–26 cm long in *B. flagelliflora* vs. 8–13 cm long in *B. esmeraldasensis*) which are also chartaceous (vs. submembranaceous in *B. esmeraldasensis*).

5. Bauhinia multinervia (Kunth) DC., Prodr. 2:515. 1825. *Pauletia multinervia* Kunth, Nov. Gen. Sp. Pl. 6:316. 1825.

Type: VENEZUELA. Miranda: Curiepe and Montaña de Capaya, 16–25 Nov 1799, *H.F.W.H.A. von Humboldt & A.J.A. Bonpland 576* (holotype: P; microfiche IDC 156/C7!; isotype: B(W); photo ex B(W): F!, G!, MO!, NY!, US!).

Pauletia glaucescens Kunth, Nov. Gen. Sp. Pl. 6:317. *Bauhinia glaucescens* (Kunth) DC., Prodr. 2:515.1825. Type: VENEZUELA. Monagas: near Caripe, 4–24 Sep 1799, *H.F.W.H.A. von Humboldt & A.J.A. Bonpland 221* (lectotype, here designated: P, microfiche IDC 157/A1!; isotype: P, microfiche IDC 157/A2!).

Bauhinia megalandra Griseb., Fl. Brit. W.I. 213. 1860. Type: ST. VINCENT: *L. Guilding s.n.* (lectotype, here designated: K!; photo ex K: F!, IJ!, US!).

Large shrub or tree to 10 m; branches ferruginous-tomentose when young, soon becoming glabrate. Leaves with the blade chartaceous, ovate, rarely suborbicular or elliptic-oblong, 7–18 cm long, 6–14 cm wide, bilobed 1/4 to 1/2 their length, the lobes slightly divaricate, the base cordate to rounded, the lobe apex rounded or obtuse, the upper surface glabrous, the lower surface minutely strigose, occasionally glaucous, ferruginous-tomentulose on the nerves and sometimes on the blade, lighter in color than the upper surface, (5–)7–9(–11)-nerved, the petiole 2–4 cm long, ferruginous-tomentose to glabrate; stipules ovate, ca. 1 mm long, persistent; adpetiolar intrastipular excrescence to 2 mm long, the others minute. Inflorescence terminal or subterminal and axillary, racemose or paniculate, 3–20-flowered, sometimes paired, the rachis ferruginous-tomentose, becoming glabrate in age, buds linear, 8–11 cm long, the apex rounded, the pedicel 1–3 cm long; bracts and bracteoles ovate, ca. 1 mm long. Hypanthium short-tubular, 2–3 cm long; calyx at first spathaceous, soon irregularly splitting to the hypanthium into 2–5 lobes; petals white, subequal, linear, 6–8 cm long, 3–6 mm wide, glabrous, the claw 6–8 mm long; fertile stamens 10, the filaments of the outer whorl 6–8 cm long, equaling or exceeding the petals, the inner whorl slightly shorter, irregularly short-connate at the base for 5–15 mm into a staminal sheath, the staminal sheath with a laciniate collar on the adaxial side, reddish tomentose at the base, the filaments sometimes tomentulose proximally to nearly their length, the anthers 1.5–2 cm long, glabrous; gynoecium 8–10 cm long, subequaling the androecium, the ovary 2–3 cm long, reddish brown-tomentose, the gynophore 4–5 cm long, reddish brown-tomentose, the style ca. 3 cm long, tomentose or tomentulose below, glabrate on the upper 1/2, greenish white, the stigma oblique-capitate. Fruit linear, apiculate with the persistent style, (15–)20–30 cm long, 2–3 cm wide, dark brown, sparsely tomentulose to glabrate, the stipe 4–6(–8) cm long, reddish brown-tomentose; seeds suborbicular or oblong, 15–18 mm long, 10–15 mm wide, the surface dull, dark brown, the funicular aril-lobe scars 12–15 mm long, extending 1/2 way around the edge of the seed.

Distribution and Ecology.—Lesser Antilles in Antiqua, Guadeloupe, Martinque, and St. Vincent, and in Venezuela, Trinidad, and Suriname. Along stream margins in deciduous forests and moist evergreen forests at 0–1,200 m. Flowering and fruiting all year. Sometimes cultivated as a novelty, but apparently not naturalizing.

Bauhinia multinervia is most closely related to *B. eilertsii*, but is easily distinquished by the appressed trichomes of the lower leaf surface (vs. erect trichomes in *B. eilertsii*).

Representative specimens examined. **ANTIQUA.** Northwest (volcanic district), Fig Tree Hill, 14 Nov 1937, *Box 1259* (BM, UC, US); without precise locality, 14–16 Feb 1913, *Rose et al. 3401* (US). **GUADELOUPE.** without precise locality, 20 m, 1839, *Beaupertuis s.n.* (P); without precise locality, 1787, *Isert s.n.* (C); without precise locality, 4 Mar 1938, *Questel 690* (US); without precise locality, s.d., *Richard s.n.* (P). **MARTINIQUE.** without precise locality, 1857, *Belanger 496* (P); without precise locality, 1882, *Duss 1124* (NY); St. Luce, 5 m, 2 Jan 1939, *Stehle & Stehle 3550* (US); without precise locality, s.d., *Terrasson 44* (P). **ST. VINCENT.** without precise locality, Mar 1890, *Smith & Smith 273* (K, NY). **VENEZUELA. Bolívar:** along road between Km 11 and 18.5, S of El Dorado, 23 Jul 1960, *Steyermark 86620* (US). **Cojedes:** near Tinaquillo, 24 Dec 1925, *Pittier 11989* (US). **Distrito Federal:** along the Río Los Caracas above town of Los Caracas, 11 Feb 1973, *Croat 21557* (MO); road to electricity plant behind Naiquetia, near sea level, 12 Mar 1974, *Gentry & Morillo 10331* (MO); along the Río Los Caracas, 0.8 m, 4 Nov 1982, *Hokche 24* (USF); along road from Country Club to Río Chacaito, Nov 1942, *Lazzer 646* (US); 1–2 km S of Los Caracas, 40 km E of La Guaira, 18 Aug 1979, *Nee 17552* (WIS). **Miranda:** along the Río Guatopo, 400–600 m, 30 Nov 1956, *Bernardi 5755* (G, MO); Parque Nacional Guatopo, near park headquarters at S entrance, 13 Feb 1973, *Croat 21729* (MO); 3 km SW of Araguita along road between Caucagua and Altigracia de Orituco, 130 m, 17 Nov 1973, *Davidse 4127* (MO); ca. 1–2 km upstream from the mouth of the Río Chiquito at its intersection with the Río Caura, S of El Gaupo, ca. 100 m, 3 Jun 1977, *Davidse & González 13600* (MO, USF, VEN); along Quebrada Chaguarama, 0–4 km SW of Palo Quemado, 6 km SE of Cúpira, ca. 50–100 m, 5 Mar 1980, *Liesner & González 9194* (MO, USF, VEN); Guinand Estate (Cardenas), Siquire Valley, 500–1,000 m, 19–24 Mar 1913, *Pittier 5982* (NY, US); Parque Nacional de Guatopo, on steep slopes bordering Santa Cruz, between Santa Teresa and Alto Garcia de Aretuco, 14.5 km

from Los Alpes, 12 km from Rancheria mi Querencia, 520 m, 23 Nov 1961, *Steyermark 89949* (NY, US); Cerros del Bachiller, near E end, margins of Quebrada Corozal, S of Santa Cruz, 10 km W of Cúpira, 20–65 m, 16–17 Mar 1978, *Steyermark & Davidse 116243* (MO, USF, VEN). **Monagas:** Montaña de Aquacate, along Quebradade Pajarral, tributary to Río Caripe, NE of Alto de Aquacate, between Caripe and Caripito, 600–900 m, 19 Apr 1945, *Steyermark 62177* (F). **Sucre:** vicinity of Cristóbal Colón (Macuro), 5 Jan–22 Feb 1923, *Broadway 633* (NY, US). **Yaracuy:** Montaña de María Lionza, vicinity of Quebrada Quibayo along the Río Yaracuy, S of Chivacoa, 250–260 m, 12 Mar 1981, *Steyermark et al. 124894* (USF, VEN). **TRINIDAD.** without precise locality, Jan 1857, *Crueger s.n.* (K); without precise locality, 1877–1780, *Fendler 328* (BM, K, P). **SURINAME.** National Reserve Brownsberg, 10 Oct 1969, *Tawjoeran s.n.* (US).

6. Bauhinia pichinchensis Wunderlin, Brittonia 35:338. 1983. TYPE: ECUADOR. PICHINCHA: Cooperativa Santa Marta #2 along Río Verde 2 km SE of Santo Domingo de Los Colorados, 530 m, 5 Feb 1979, *C.H. Dodson, A.H. Gentry, and J.A. Duke 7594* (HOLOTYPE: SEL!; ISOTYPES: MO!, USF!).

Tree to 10 m; branches reddish brown-tomentulose when young, glabrate in age. Leaves with the blade chartaceous, oblong-suborbicular, 14–24 cm long, 13–21 cm wide, emarginate or bilobed to 1/4 their length, the lobes slightly divaricate, the base cordate, the lobe apex rounded, the upper surface glabrous, the lower surface reddish brown short-tomentose or -tomentulose, at least on the nerves, conspicuously reticulate-nerved, lighter in color than the upper surface, 11-nerved, the petiole 4–5 cm long, reddish brown-tomentulose; stipules lanceolate, ca. 2 mm long, deciduous; adpetiolar intrastipular excrescence to 2 mm long, the others minute. Inflorescence subterminal and axillary, short-racemose, 2–4-flowered, the flowers paired, the rachis reddish brown short-tomentose; buds linear-fusiform, ca. 5 cm long, the apex acute, obscurely 5-nerved, the peduncle ca. 1 cm long, the pedicel 2–2.5 cm long; bracts and bracteoles triangular-ovate, 1–1.5 mm long, persistent. Hypanthium short-tubular, ca. 1 cm long, 5- or obscurely 10-nerved; calyx at first spathaceous, soon irregularly splitting to the hypanthium into 2–5 lobes; petals white, subequal, linear, 4–5 cm long, 3–6 mm wide, the claw 1–1.5 cm long; fertile stamens 10, the filaments of the outer whorl 3–4 cm long, the inner whorl slightly shorter, irregularly connate at base for 1–2 mm into a staminal sheath, the staminal sheath glabrous, the anthers ca. 1 cm long, glabrous; gynoecium ca. 5 cm long, subequaling the androecium, the ovary ca. 1.5 cm long, tomentose, the gynophore ca. 1.5 cm long, glabrate, the style ca. 1 cm long, tomentulose, the stigma obliquely capitate. Fruit linear oblanceolate, apiculate with the persistent style base, 20–25 cm long, 3–3.5 cm wide, light brown, glabrate, the stipe ca. 3 cm long, glabrate; seeds 16–18 mm long, 14–16 mm wide, the surface dull brown, the funicular aril lobe scars extending about 1/2 way around the edge of the seed.

Distribution and Ecology.—Known only from Ecuador in Carchi, Esmeraldas, and Pichincha. In forest at 250–1,200 m. Flowering and fruiting all year.

First collected by Raymond Benoist in 1930, the plant was rediscovered by Calaway H. Dodson in 1979 and recognized as a new species by Wunderlin (1983). It most closely resembles *B. conceptionis* of Colombia in having large suborbicular, emarginate to slightly bilobed leaves, but differs from that species by having larger leaves (14–24 cm long in *B. pichinchensis* vs. 8–13 cm long in *B. conceptionis*) and the ovary tomentulose (vs. densely tomentose in *B. conceptionis*). *Bauhinia conceptionis* is related more closely to *B. tarapotensis* than to *B. pichinchinensis*.

Specimens examined. **ECUADOR. Carchi:** Reserva Indígena Awá, San Marcos, 25 km NW of El Chical (01°02'N, 78°14'W), 1,800 m, 15–28 Jun 1991, *Rubio et al. 943* (MO, USF); Reserva Indígena Awá, Gualpi Alta (01°02'N, 78°14'W), 1,800 m, 15–28 Jun 1991, *Rubio et al. 1730* (MO, USF). **Esmeraldas:** Reserva Ethnica Awá, Centro de La Unión, Cañón del Río Mira (00°52'N, 78°26'W), 250 m, 22 Mar 1993, *Aulestia & Aulestia 1467* (MO, USF); road from Lita to San Lorenzo, 10 km N of Lita, 11 May 1987, *Acevedo & Daly 1684* (NY, USF); Reserva Ethnica Awá, Centro Pambilar (01°08'N, 78°36'W), 500 m, 21 Jan 1993, *Aulestia & Aulestia 1052* (MO, USF); Reserva Indígena Awá, Cañón del Río Mira, 10 km E of Alto Tambo (01°02'N, 78°26'W), 250 m, 16–26 Mar 1991, *Rubio et al. 1141* (MO, USF). **Pichincha:** Santo Pas, Charco Vicente, Río San Miguel (00°43'N, 78°53'W), 200 m, 20–31 Sep 1993, *Tirado et al. 394* (MO, USF); Santo Domingo de Las Colorados, 8 Sep 1930, *Benoist 3043* (US); Cooperativa Santa Marta #2 at km 3 W of bypass round Santo Domingo de Las Colorados, 530 m, 22 Jul 1979, *Dodson et al. 8541* (MO, SEL, USF); Centinela, 12 km E of Patricia Pilar at Km 45 between Santo Domingo de Las Colorados, 600 m, 2 Feb 1985, *Dodson & Neil 15525* (MO, USF).

7. Bauhinia tarapotensis Benth. in Mart., Fl. Bras. 15(2):198. 1870. TYPE: PERU. SAN MARTÍN: near Tarapoto, 1855–1856, *R. Spruce 4417* (HOLOTYPE: K!; ISOTYPES: B-destroyed, BM!, K!, F!, G!, P!; photo ex K (holotype): F!; photo ex B: F!, MO!; photo ex G: F!, MO!).

Ariaria superba C. Cuervo Márquez, Prehist. & Viajes 219. 1893. TYPE: PERU. LORETO: near mouth of Río Santiago, 200 m, 25 Nov 1931, *Y. Mexia 6158* (NEOTYPE: F!; ISONEOTYPES: BM!, G!, K!, MO!, WIS!). Neotype here designated. No specimens were cited in the protolog. The name was overlooked until Forero (1966) concluded that it was a synonym of *B. tarapotensis* Benth.

Bauhinia baina J.F. Macbr., Field Mus. Nat. Hist., Bot. Ser. 13(3):211. 1943. TYPE: PERU. LORETO: Río Mazán, 10 May 1929, *Ll. Williams 186* (HOLOTYPE: F!; ISOTYPE: US!). Macbride gives the locality in the protolog as ARío Mazán@ and no date. The handwritten label on the holotype says ARio Masana@ (presumably Río Mazán), and the date 10 May 1929. The printed label with the specimens states Aalong Río Itaya@ AMay, 1929@.

Bauhinia amplifolia Ducke, Bol. Tecn. Inst. Agron. N. 2:16. 1944. TYPE: BRAZIL. AMAZONAS: near Tabatinga, margin of the Paraná de Aramassa, 4 Mar 1944, *A. Ducke 1594* (HOLOTYPE: IAN; ISOTYPES: F!, MO!, US!).

Large shrub or tree to 10(19) m; branches strigulose to tomentulose, soon becoming glabrate. Leaves with the blade chartaceous, ovate, 10–20(–25) cm long, 7–15 cm wide, bilobed 1/4–1/2 their length, the lobes slightly divaricate, the base rounded to cordate, the lobe apex acute to obtuse, the upper surface glabrous, the lower surface minutely strigose, often reddish brown-tomentulose toward the base and on the nerves, slightly lighter in color than the upper surface, 9–11-nerved, the petiole 2.5–4(–6) cm long, tomentulose to glabrate; stipules ovate to lanceolate, ca. 2 mm long, caducous; adpetiolar intrastipular excrescence to 3 mm long, the others minute. Inflorescence terminal or subterminal and axillary, 2–20-flowered, the flowers paired, the rachis strigose to tomentose; buds linear, 11–13(–18) cm long, the apex acute, obscurely 5-nerved, the peduncle ca. 5 cm long, the pedicel 5–10 mm long; bracts and bracteoles lanceolate, 2–3 mm long, persistent. Hypanthium long-tubular, 4–6 cm long, 10-nerved; calyx at first spathaceous, soon irregularly splitting to the hypanthium lip into 2–5 lobes; petals white, subequal, glabrous or glabrate, linear-filiform to -spathulate, 9–15 cm long, 3–10(–25) mm wide, the margin crisped, the claw 1.5–2 cm long; fertile stamens 10, the filaments of the outer whorl 7–13 cm long, the inner whorl slightly shorter, occasionally with 2 reduced, irregularly connate at the base for 7–18 mm into a staminal sheath, the staminal sheath glabrous or tomentulose on the inner surface, the anthers linear, 10–17 mm long; gynoecium 8–13 cm long, subequaling the androecium, the ovary 2–3 cm long, with glandular trichomes or rarely tomentulose to tomentose, the gynophore 6–10 cm long, glabrous, the style 4–6 cm long, glabrous, the stigma obliquely capitate. Fruit linear, apiculate with the persistent style base, brown, 15–25 cm long, 2.5–3.5 cm wide, the stipe 4–5 cm long, glabrous; seeds elliptic-obovate to suborbicular, 15–20 mm long, 11–18 mm wide, the surface dull, brown, the funicular aril-lobe scars ca.1.5 cm long, extending 1/3–1/2 the way around seed.

Distribution and ecology.—Colombia in Caqueta, Meta, and Putumayo; Ecuador in Napo, Morona-Santiago, and Pastaza; Peru in Amazonas, Huánuco, Loreto, San Martín, and Ucayali; Brazil in Acre and Amazonas. In high primary or secondary rainforest, usually along rivers at 90–1,000 m. Flowering and fruiting all year.

Bauhinia tarapotensis is closely related to *B. conceptionis*, a species restricted to Colombia, but differs in having ovate leaves (vs. suborbicular in *B. conceptionis*) with acute to obtuse lobes apices (vs. rounded in *B. conceptionis*) and larger flowers (14–21 cm long in *B. tarapotensis* vs. 6–7 cm long in *B. conceptionis*).

Representative specimens examined. **COLOMBIA. Caquetá:** 10 km below Puerto Rico, 350–400 m, 27 Sep 1975, *Cabrera et al. 3522* (USF); Florencia, Río Orteguaza, 400 m, 21 Mar 1965, *Garcia-Barriga 18198* (US); 10 km S of San José de Fragua, 320 m, 11 Jan 1974, *Gentry et al. 9145* (MO). **Meta:** Puerto Losada, Mina Blanca-Puerto Losada road (16 km), 360–450 m, 23 Feb 1988, *Callejas & Marulanda 5889* (USF); margin of the Río Guayabero, Macarena rapids, 380 m, 23 Jan 1959, *Pinto et al. 304* (P); N side of river near junction of Guejar and Río Zanza, N end of Cordillera Macarena, ca. 500 m, 20 Aug 1950, *Smith & Idrobo 1482* (COL, MO, US). **Putumayo:** E slope of Cordillera Oriental, tributary of the Río Mocoa, near Mocoa, 700 m, 8 Jan 1945, *Ewan 16723* (BM, P); Umbria, 325 m, Oct–Nov 1930, *Klug 1830* (BM, F, K, MO, NY, US). **ECUADOR. Napo:** from Coca to 1 hour in canoe downstream on the Río Napo, (00°26–27'S, 76°41–57'W), 200 m, 18 Mar 1980, *Brandbyge et al. 30232* (AAU, USF); Taisha, Río Guambime, (02°23'S, 77°30'W). 400 m, 19 Jun 1980, *Brandbyge et al. 322601* (AAU, USF); Río Wai si ayá, a northern tributary to Río Aguarico, ca. 6 km upriver from San Pablo, (00°51'S, 76°21'W), 300 m, 10 Aug 1980, *Brandbyge & Asanza 32764* (AAU, USF); Río Wai si ayá, 1 km upstream from the outlet in Río Aguarico, (00°15'S, 76°21'W), 300 m, 6 Aug 1981, *Brandbyge et al. 33260* (AAU, USF); Reserva Biológica Jutan Sacha, Río Napo, 8 km E of Misahuallí, (01°04'S, 77°36'W), 450 m, 24 Apr–5 May 1987, *Cerón 1329* (MO, USF); Reserva Biológica Jutan Sacha, 8 km E of Misahuallí, bank of Río Napo, (01°04'S, 77°36'W), 450 m, 4 Sep 1987, *Cerón et al. 2162* (MO, USF); along road between Puerto Napo and Misahuallí (junction of Río Misahuallí and Río Napo) at Vereda Venesia, 3.8 km W of Misahuallí, (ca. 01°02'S, 77°42'W), 370 m, 2 May 1984, *Croat 58889* (MO, USF); between Cotapino (Concepción) and Río Bueno, ca. 400 m, 21 Feb 1968, *Harling et al. 7154* (GB, USF); Latas, Río Napo, 12 Aug 1968, *Lugo 260* (GB, USF); Apuyam, ca. 6 km from Puerto Napo, 14 Aug 1968, *Lugo 298* (GB, USF); southern side of Río Napo, 3–4 km S of Coca (Puerto Francisco de Orellana), 8 Jan 1973, *Lugo 2546* (GB, USF); Tierra Colorada, ca. 3 km N of Coca (Puerto

Francisco de Orellana), 22 Jan 1973, *Lugo 2916* (GB, USF); San Pablo at Río Napo, 6–7 km SW of Coca (Puerto Francisco de Orellana), 28 Jan 1973, *Lugo 3012* (GB, USF); road between Lago Agrio and El Chaco, 23 Feb 1973, *Lugo 3487* (GB, USF); near Tena, 400 m, 2–11 Apr 1935, *Mexia 7142* (US); Añangu, near outlet of Río Añangu into Río Napo in Parque Nacional Yasuní, ca. 250 m, 30 Jun–9 Jul 1982, *SEF 10261* (AAU). **Marona-Santiago:** Centro Shur Yukutais, Chacras S of Centro, (03°30'S. 78°10'W). 22 Apr 1989, *Bennett & Andrade 3795* (NY, USF); near Mendez, bewteen the Río Paute and Río Upano, 530–760 m, 12 Nov 1944, *Camp E-949* (K, US); Taisha, banks of Río Guaguayme, 460 m, 6 Feb 1962, *Cazalet & Pennington 7681* (K, US); vicinity of Mendez, ca. 620 m, 14 Oct 1989, *Luther et al. 2712A* (SEL, USF). **Pastaza:** Lorocachi, 1–5 km up Río Curaray from military camp, (01°38'S, 75°58'W), 200 m, 30 May 1980, *Branbyge & Asanza 31407* (AAU, USF); Curaray, Valle de la Muerte, (01°25'S, 75°52'W), 240 m, 22 Mar 1980, *Holm-Nielsen et al. 22531* (AAU, USF); Montalvo, along Río Bobonaza 0–1 km N of the military camp, (02°05'S, 76°58'W), 250 m, 16 May 1979, *Løjtnant & Molau 13300* (AAU, USF); Montalvo, within the military camp, (02°05'S, 76°58'W), 250 m, 17–22 May 1979, *Løjtnant & Molau 17470* (AAU); Río Tinguiza, in the vicinity of Canelos, 15 Mar 1971, *Lugo 1689* (GB, USF); Río Bobonaza, near outlet into Río Pastaza, between Destacamento Cabo Pozo and La Boca, (02°30'S, 76°38'W). ca. 275 m, 21 Jul 1980, *Øllgaard et al. 34917* (AAU, USF); Río Pastaza, river banks between the outlets of Río Bobonaza and Río Ishpingo, (ca. 02°34'S, 76°43'W), ca. 275 m, 22 July 1980, *Øllgaard et al. 34983* (AAU, USF). **PERU. Amazonas:** near Kusu, Río Numpatkin, 340–400 m, 10 Mar 1973, *Ancuash 79* (MO); Río Cenepa, vicinity of Huampmi, ca. 3 km from the mouth of the Río Huampami, 200–250 m, 25 Jul 1978, *Ancuash 1115* (MO, USF); Quebrada Chigki Shinuk, Río Cenepa, vicinity of Huampami, ca. 5 km E of Chávez Valdivia, (04°30'S, 78°30'W), 200–250 m, 11 Aug 1978, *Ancuash 1422* (MO, USF); Río Cenepa, vicinity of Huampami, ca. 5 km E of Chávez Valdivia, (04°30'S, 78°30'W), 200–250 m, 14 Aug 1978, *Ancuash 1473* (MO, USF); Río Cenepa, vicinity of Huampami, Quebrada Kachaig, ca. 5 km E of Chávez Valdivia, (04°30'S, 78°30'W), 200–250 m, 15 Aug 1978, *Ancuash 1506* (MO, USF); island 1 km below La Poza, Río Santiago, 180 m, 8 Aug 1979, *Peña 13* (MO, USF). **Huánuco:** just N of Puerto Inca, (09°18'S, 74°58'W), 250–300 m, 15 Sep 1982, *Foster 8811* (MO, USF). **Loreto:** along the Río Pastaza, between Rimachi and Río Witoyacu, (04°15'S, 76°35'W). 31 Jul 1979, *Diaz et al. 1313* (MO, USF); near mouth of the Río Gueppi, ca. 200 m, 18 May 1978, *Gentry et al. 22080* (MO, USF); Florida, Río Putumayo, at mouth of Río Zubineta, 180 m, May–Jul 1931, *Klug 2169* (BM, F, K, MO); Balsapuerto, ca. 220 m, Mar 1933, *Klug 2974* (BM, F, MO); Maucallacta, Río Paranapura, ca. 200 m, Jan 1935, *Klug 3941* (BM, F, K, MO, WIS); near mouth of Río Santiago, 200 m, 25 Nov 1931, *Mexia 6158* (BM, F, G, K, MO, WIS). **San Martín:** E of Tarapoto 8 km, Fundo de San Isidro near Codo Creek, 1,000 m, 15 Aug 1937, *Belshaw 3234* (K); Juan Jui, upper Río Huallaga, ca. 400 m, Oct 1934, *Klug 3851* (BM, F, MO, WIS); Juan Jui, Alto Río Huallaga, 400–800 m, Jan 1936, *Klug 4234* (BM, K, MO); 7–15 km E of Shapojo on road to Chazuta, (06°39'S, 76°30'W, 250 m, 25 May 1986, *Knapp et al 7271* (MO, USF); Quebrada Mamonaquihua to junction with Río Mayo, 9.6 km W of Flores-Mamonaquihua (turnoff is on Km 24 from Tarapoto), (06°36'S, 76°10–11'W), ca. 400 m, 15 May 1986, *Knapp et al. 7406* (MO, USF); Chara del Sr. Manuel Arévalo Silva, along the Río Huallaga, 400 m, 13 Jul 1970, *Schunke Vigo 4106* (F, G); Río de la Plata, 600–700 m, 27 Mar 1975, *Schunke Vigo 8169* (MO, US, USF); mouth of the Río Tocahe, 400 m, 29 Apr 1975, *Schunke Vigo 8329* (MO, USF). **Ucayali:** Quebrada Shesha, tributary of Río Abujao, 1–2 days upriver by "peki-peki", ca. 60–70 km NE of Pucallpa, (08°02'S, 73°55'W), ca. 250 m, 18 Jun 1987, *Gentry & Diaz 58412* (MO, USF); Bosque Von Humboldt, along Quebrada Tahuahillo, ca. 200 m, 20 Jun 1981, *Young 937* (MO, USF). **BRAZIL. Acre:** near mouth of Rio Macauhan (tributary of Rio Yaco), 5 Aug 1933, *Krukoff 5293* (BM, F, G, K, MO). **Amazonas:** Rio Solimões, 2 km below Tabatinga, 24 Jul 1973, *Prance et al. 16771* (K, MO, USF).

ACKNOWLEDGMENTS

I gratefully acknowledge the curators of AAU, BM, CM, COL, F, G, GB, IJ, K, LE, MO, P, SEL, NY, UC, US, VEN, and WIS for making specimens available for study. I thank Bruce Hansen (USF) for his helpful suggestions and Alan Franck (USF) for assistance with graphics. I also acknowledge Rafael Torres Colín (MEXU) and Howard L. Clark (DUKE) for review of the manuscript and helpful suggestions.

REFERENCES

Forero G., E. 1966. La identidad de *Ariaria superba* Cuervo Márquez (Caesalpiniaceae-Bauhinieae). Mutisia 30:[1–7].

Vaz, A.M.S. da F. and A.M.G. de Azevedo Tozzi. 2003. *Aculeatae*, a new series in *Bauhinia* section *Pauletia* (Leguminosae, Caesalpinoideae, Cercideae). Novon 13:141–144.

Wunderlin, R.P. 1983. Three new species of *Bauhinia* (Fabaceae) from Ecuador. Brittonia 35:335–340.

Wunderlin, R.P. 2006. Revision of *Bauhinia* subgenus *Bauhinia* section *Amaria* (Cercideae: Caesalpinioideae: Fabaceae). Sida 22: 97–122.

Wunderlin, R.P., K. Larsen, and S.S. Larsen. 1987. Reorganization of the Cercideae (Fabaceae: Caesalpinioideae). Biol. Skr. 28:1–40.